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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------------|-------------|----------------------|------------------------|------------------|
| 10/813,578 | 03/30/2004 | Yugang Cui | 9539-000107 | 4316 |
| 27572 | 7590 | 09/01/2005 | EXAMINER | |
| HARNESS, DICKEY & PIERCE, P.L.C. | | | ESTREMSKY, SHERRY LYNN | |
| P.O. BOX 828 | | | | |
| BLOOMFIELD HILLS, MI 48303 | | | ART UNIT | PAPER NUMBER |
| | | | 3681 | |

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/813,578 | CUI ET AL. | |
| | Examiner | Art Unit | |
| | Sherry L. Estremsky | 3681 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,4-12,14 and 16-20 is/are rejected.
- 7) Claim(s) 2,3,13,15 and 21 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10 September 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Objections

1. Claims 10 and 14 are objected to because of the following informalities: in claim 10, line 2, "said output shaft" lacks antecedent basis; in line 9 of claim 14, "said lubrication" should be -- said lubricant--, since that was the term used in line 4. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9 and 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 1 of claim 9, "said input shaft" incorrectly claims the disclosed invention because the shaft that includes threads was not disclosed as being an input shaft.

The scope of claims 16-20 cannot be determined because claim 16 is dependent on itself. For the purpose of this action, claim 16 is being considered as being dependent on claim 15, since it includes the first appearance of the limitation "a first member" which is also in claim 16.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 4-12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Dolan, U. S. Patent 3,848,691.

Figure 1 of Dolan shows a power transfer device.

The power transfer device includes a casing 19.

Chamber 145 is a lubricant reservoir in the casing.

Shaft 113 is rotatably supported in the casing by bearings 137 and 157 and extends into the lubricant reservoir 145.

Lubricant is in the lubricant reservoir (column 3, lines 31-33).

A lubricant driving structure 155 is coupled to the shaft for common rotation therewith, and includes at least one helically shaped member that extends longitudinally along and circumferentially about at least a portion 153 of the shaft 113 (column 3, lines 40-41). The helically shaped member 155 is at least partially located in the lubricant reservoir (figure 1).

Rotation of the at least one helically shaped member drives a portion of the lubricant in an axial direction along the shaft and away from the lubricant reservoir (column 3, lines 41-43).
(claim 1)

The helically shaped member 155 is integrally formed with the shaft 113.

(claim 4)

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Shaft 113 extends into a hole formed into collar 139 and the helically shaped member 155 terminates axially along the shaft prior to a point at which the shaft enters the hole (figure 1).
(claim 5)

A recessed area, part of spline 141, is formed into the collar 139 about the hole.
(claim 6)

Shaft 113 extends into a hole in the hub 151 and the helically shaped member extends through the hole.

(claim 7)

A differential assembly 97 is coupled to the shaft 113 (differential side gear 109 is formed on the end of shaft 113 -- column 3, lines 12-14). The helically shaped member is threads defined along a circumferential surface of the shaft, the threads operable to direct a portion of the lubricant from the lubricant reservoir in a direction axially along the shaft and toward the differential assembly 97 (column 3, lines 40-43).

(claim 8)

Shaft 113 is mounted for rotation by bearings 157 within a structure, the structure being spaced radially apart from the threads to form a fluid passage.

(claim 9)

The threads 155 are formed along an intermediate portion of shaft 113, which is an output shaft, and define an entry portion to the right in figure 1 wherein the lubricant comes into contact with the threads and a delivery portion to the left in figure 1 wherein the lubricant is output in a direction toward the differential assembly 97.

(claim 10)

The casing, including wall 149, defines a passage 147 adapted to permit the lubricant to return the lubricant reservoir 145 from the differential assembly 97 (column 3, lines 31-33).

(claim 11)

The entry portion of the threads 155 is disposed in the fluid reservoir.

(claim 12)

The power transfer device shown in figure 1 having a casing 19 also includes a lubricant reservoir 21 in the casing 19 (column 4, line 66 to column 5, line 4).

Lubricant is in the lubricant reservoir 21.

Shaft 29 is rotatably supported within the casing 19 and extends into the lubricant reservoir 21.

Differential assembly 97 is coupled to the shaft 29 through gears 35, 37, 57, and 63.

The right side face of gear 35 forms an oil propeller wheel, indicated at 81, which is fixedly mounted around shaft 29 for rotation therewith. The oil propeller wheel communicates with the lubricant in the lubricant reservoir and is operable to direct a portion of the lubricant from the lubricant reservoir in a direction axially along the shaft 29 and toward the differential assembly (column 2, lines 58-60 and column 4, lines 35-39).

(claim 14)

Allowable Subject Matter

6. Claims 2, 3, 13, 15, and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 16-20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent 2,997,897 (Brownyer) August 1961 - discloses a shaft coupled to a differential and on which a lubricant propeller wheel is fixed.

U. S. Patent 3,015,970 (Mueller) January 1962 - discloses a differential shaft surrounded by a spiral lubricant passage way formed in the case.

U. S. Patent 4,183,263 (Osenbaugh) January 1980 - discloses a shaft in a differential with helical lubrication groove formed on its surface.

U. S. Patent 6,063,001 (Sühling et al.) May 2000 - discloses a gearbox with a threaded pump for lubricant.

U. S. Patent 6,132,329 (Tison) October 2000 - discloses shafts coupled with a differential and having helical protrusions to move lubricant.

JP 6-341516 (Nakabayashi) December 1994 - discloses a differential shaft with a helical feature to move lubricant.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherry L. Estremsky whose telephone number is (571) 272-7090. The examiner can normally be reached on Tuesday and Friday from 7:30 a.m. to 6:00 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on (571) 272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SLE


SHERRY ESTREMSKY
PRIMARY EXAMINER
AV3681 8-30-05